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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,521	04/06/2004	Eugene Napadensky	ARL 03-01	4316
37064	7590	04/18/2007	EXAMINER	
OFFICE OF COMMAND COUNSEL, U.S. ARMY MATERIEL COMMAND ATTN: AMCCC-B-IP 9301 CHAPEK ROAD FORT BELVOIR, VA 22060-5527			ASINOVSKY, OLGA	
			ART UNIT	PAPER NUMBER
			1711	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/18/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/828,521	NAPADENSKY ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Olga Asinovsky	1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 January 2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,2,5-12 and 14-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2,5-12 and 14-20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 06 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____.                         |

## DETAILED ACTION

### ***Response to Amendment***

The amendment of January 26, 2007 is entered.

The cancellation of claims 3-4, 13 and 21-30 is noted.

The applicants' request to rejoin withdrawn Group II, claims 12 and 14-20 is persuasive since the sulfonated three-block copolymer is present in Group I in claim 8. Therefore, claims 12 and 14-20 are hereby rejoined and fully examined.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 5-12, 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al U.S. Patent 6,579,948.

3. References have been considered in the previously office action mailed on 09/26/2006. All discussions are adequately set here.

Tan'948 discloses a sulfonated PS-PIB-PS block copolymer having a sulfonation level in the range of from 1 to 70 mole %, column 11, line 46. The claimed "Z" can be "H" referring to the present claim 6. Therefore, radical "R" and "Z" is a sulfonic acid  $-SO_3H$  group that is readable for being selected "RZ" in the present claims. A proton of the sulfonic acid segment is replaced with an organic or inorganic cation, column 6, lines 20-23, depending on the particular application. The three sulfonated PS-PIB-PS

membranes can have different levels of sulfonation, column 9, line 59. Tan'948 discloses a process for making a sulfonated PS-PIB-PS block copolymer. It would have been obvious to one of ordinary skill in the art to control the sulfonation process in Tan'948 for obtaining the desired level of sulfonation in the range of over 0.7n of the monomer C in copolymer A, because the sulfonation level is depending on the sulfonation process condition and on the desired application.

***Response to Arguments***

4. Applicant's arguments filed January 26, 2007 have been fully considered but they are not persuasive. The argument is that Tan'948 does not disclose the sulfonation level above 70 mole %. The examiner did not feel that the present claims disclose sulfonation level above 70 mole %. The independent claim 1 claims that "RZ is present on over 0.7n of the monomer C in copolymer A," wherein integer n can be 10, thus, RZ is 7% of sulfonation. In claim 12 "RZ is present on over 0.7(n+q) of P (phenyl)," wherein n+q can be 10+10, thus, RZ is 20% of sulfonation level.  
The term "cation" for "Z" can be selected for being H. There is no argument that  $-SO_3H$  is not readable in Tan'948. The neutralization or converting the sulfonic acid segment into a salt with a cation in claim 6 is optional, since "Z" is selected under Markush group practice, and "H" is readable in Tan'948.

5. Claims 1-2, 5-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al U.S. Patent 6,579,948 in view of Storey et al U.S. Patent 5,039,752.

The rejection is set forth in the office action mailed on 09/26/2006 and it is incorporated here by references.

Tan does not disclose a cation "Z" for being selected from the group consisting of a lanthanide species, an alkaline earth metal and an alkali metal.

Storey discloses sulfonated polystyrene block that is converted into a salt with an alkali metal, amine, amine derivative to form ionic sulfonic acid saltd, col. 1. lines 61-64; col. 3, lines 1-18; col. 4, lines 58-63; col. 5, lines 6-15. The sulfonated polystyrene is readable in the present claim 5. The neutralization/reacting with alkali metal or amines is readable for being a cation in the present claims 1, 4, 6, 12 and 14-15.

It would have been obvious to one of ordinary skill in the art to modify the sulfonated block copolymer in Tan invention by neutralizing/reacting with alkali metal or amines to form ionic sulfonic acis salt by teaching in Storey invention as a benefit for being a polyelectrolyte for using as a binder for solid, high-energy composition.

#### ***Response to Arguments***

6. Applicant's arguments filed January 26, 2007 have been fully considered but they are not persuasive.

7. The high level of sulfonazing polystyrene is not clearly set in the present claims.

8. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view

of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

9. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both references discloses the same sulfonated polystyrene, the polyisobutylene and polyisoprene are elastomeric segment, which willnot change the sulfonation degree.

New search has been made for a high level of sulfonation of polystyrene.

10. Claims 1-2, 5-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al U.S. Patent 6,579,948 in view of Murata et al U.S. Patent 3,553,286.

11. Murata discloses sulphonated polystyrene having a degree of sulphonation of 84.2%, column 4, line 59.

12. It would have been obvious to one of ordinary skill in the art to modify the sulfonated polystyrene in Tan'948 to the desired sulfonation level by the teaching in Murata invention because Murata discloses a highly sulfonated polystyrene that can be

obtained by controlled sulfonation process condition, and since the sulfonation degree is depending on the desired application.

13. The Declaration of Mr. Napadensky has been considered.

This action is not final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.A.  
April 12, 2007.



James J. Seidleck  
Supervisory Patent Examiner  
Technology Center 1700